

WHAT IS CLAIMED IS:

- 1 1. A semiconductor device, comprising:
2 a substrate;
3 a well region, formed in the substrate;
4 a field effect transistor, formed in the well
5 region; and
6 a diffused region, formed across the well
7 region and the substrate for applying back gate
8 potential to the well region, and forming a PN junction
9 together with its periphery,
10 wherein the field effect transistor and the
11 PN junction are connected between terminals for
12 absorbing excess current so that an internal circuit
13 connected to the terminals is protected.

- 1 2. The semiconductor device as set forth in claim
2 1, wherein a gate of the field effect transistor
3 comprises:
4 a gate oxide film formed on a channel;
5 a protective film formed on the gate
6 oxide film; and
7 a conductive material formed on the
8 protective film.

- 1 3. The semiconductor device as set forth in claim
2 2, wherein the gate of the field effect transistor
3 is comprised of metal.

- 1 4. The semiconductor device as set forth in claim
2 1, wherein the field effect transistor is a plurality
3 of field effect transistors which are provided in the
4 well region; and
5 wherein the field effect transistors share a

6 gate and a drain.

1 5. The semiconductor device as set forth in claim
2 1, further comprising an impedance element having
3 larger impedance than the impedance of the field effect
4 transistor and a diode forming the PN junction in a
5 case that the field effect transistor and the diode
6 are turned on,

7 wherein the impedance element is arranged
8 between the internal circuit and at least one of the
9 field effect transistor and the diode.

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1 6. The semiconductor device as set forth in claim
2 1, further comprising a second diffused region
3 connected to the diffused region so that the PN
4 junction is formed with the defused region.

1 7. A semiconductor device, comprising:
2 an internal circuit, connected to a plurality
3 of terminals;

4 a protection circuit, connected between the
5 terminals for protecting the internal circuit,

6 wherein the protection circuit includes:

7 a first element, having a rising edge
8 of current equivalent to that of a diode as a response
9 to current that flows according to potential
10 difference between the terminals; and

11 a second element, having a impedance
12 equivalent to that of a transistor after the rise edge
13 of current.